INDIANA DEPARTMENT OF NATURAL RESOURCES
DIVISION OF FISH AND WILDLIFE
LAKE AND RIVER ENHANCEMENT PROGRAM

DESCRIPTION OF WATERSHED DIAGNOSTIC STUDY

Goals of the study

- Describe condition and trends in selected streams and watersheds
- Identify potential nonpoint source water quality problems
- Prioritize potential watershed land treatment projects
- Propose specific direction for future work
- Predict and assess success factors for future work

General description of the study

The goal of the diagnostic study is to: (1) prioritize the subwatersheds according to need for agricultural soil and water conservation practices and (2) to provide a rough estimate of the extent of the need (number, overall cost, and general location of practices). Most watershed diagnostic studies cover a total area of approximately 25,000-50,000 acres with prioritization among four to ten subwatersheds. Subwatersheds are usually tributaries to the same large river system but are not necessarily adjacent to each other. Total cost for the project typically ranges from $30,000 to $40,000. The sponsoring SWCD is expected to support the project through a 10 percent cash match (e.g., $3,000-4,000) with an option to contribute half of the match (5%) as in-kind services.

Mapping in most diagnostic studies includes: a land use map that distinguishes different practices (row cropping, pasture, confined feeding, forest, urban); a soils map showing highly erodible land and hydric soils; identification of very serious erosion or water quality problems; and a map showing location of current wetlands and potential sites for wetland restoration or creation that would detain flood water or sediments and nutrients.

Much of this information can be derived from digitized or available soil surveys or aerial photographs. However, a discussion with the SWCD and some ground-truthing will be needed to locate more specific problem areas.

The use of detailed modeling procedures like AGNPS is not necessary, but a lower resolution approach to prioritizing the subwatersheds on the basis of nonpoint source pollution would be needed. This might be based on USLE-type predictions of pollutant movement as reflected by percent of land in different uses and soil erodibility in the subwatersheds in combination with comparative results of the chemical and biological stream monitoring. The use of this information provides a sound basis for submitting applications to funding programs for watershed land treatment in prioritized subwatershed areas.

TYPICAL COMPONENTS OF A WATERSHED DIAGNOSTIC STUDY

Monitoring
- Water chemistry in mainstem and mouth of tributaries (nutrients, turbidity, oxygen)
- Macroinvertebrate surveys for biological monitoring (RBP II – identified to family)
- Habitat assessment (QHEI)

Summary of previous studies
- Land use data (river and watershed size, number of homes, development history)
- Significant natural areas or listed species
- Fish surveys, trends, and management recommendations from DFW
- Recreational use information (canoeing, fishing, camping)
- Volunteer monitoring data
- Annotated bibliography of all previous studies

Land use maps
- Subwatershed land use maps (agriculture, forest, urban, wetland)
- Highly Erodible Land map
- Wetland / hydric soils map
- Significant natural areas map
- Streambank protection map (seawalls, erosion zones, erosion causes)
- Potential nonpoint sources and hot spots (general, not individual properties)

Analysis and recommendations
- Subwatershed modeling (relative nonpoint source contributions)
- Comparison of water quality with similar regional rivers
- Wetland functional assessment and conservation opportunities
- Institutional assessment
- Coordinated Resource Management (CRM) recommendations
- Volunteer monitoring groups identified or recommended
- Watershed management and leadership resource inventory
- Prioritize project areas
- Cost estimates and timeline

Products
- Public information “fact sheet” or brochure
- Public information meeting
- Bound copies of final report
- Unbound copy of final report
- Digital copy of final documents, including figures, in word-processing and web-ready formats